

## CLAIMS

### WHAT IS CLAIMED IS:

1. A humidity control device which comprises an adsorptive element (81, 82)  
5 having a humidity control passageway (85) capable of adsorbing moisture from a first air stream and of releasing moisture to a second air stream and which supplies to an indoor space an air stream after the air stream being controlled in its humidity by the adsorptive element (81, 82),

wherein the adsorptive element (81, 82) is provided with an auxiliary passageway  
10 (86) through which a heating fluid flows when the adsorptive element (81, 82) is regenerated by releasing moisture from the humidity control passageway (85).

2. The humidity control device of claim 1, wherein, during regeneration of the adsorptive element (81, 82), all of a second air stream prior to its passage through the  
15 humidity control passageway (85) flows, as a heating fluid, into the auxiliary passageway (86).

3. The humidity control device of claim 1, wherein, during regeneration of the adsorptive element (81, 82), a part of a second air stream prior to its passage through the  
20 humidity control passageway (85) flows, as a heating fluid, into the auxiliary passageway (86), joins the rest of the second air stream, and passes through the humidity control passageway (85).

4. The humidity control device of either claim 2 or claim 3, wherein said  
25 humidity control device includes a regeneration heater (72) which heats a second air stream prior to its entrance into the humidity control passageway (85) and the auxiliary passageway (86).

5. The humidity control device of claim 4, wherein said humidity control device

includes a refrigerant circuit (70) through which a refrigerant is circulated to perform a refrigeration cycle, and wherein the regeneration heater (72) is formed by a heating-heat exchanger of the refrigerant circuit (70).

5           6. The humidity control device of either claim 2 or claim 3, wherein said humidity control device includes a regeneration heater (72) which heats a second air stream prior to its entrance into the humidity control passageway (85) and the auxiliary passageway (86), and an auxiliary heater (78, 79) which heats a second air stream after its passage through the auxiliary passageway (86) before the second air stream flows into the  
10   humidity control passageway (85).

          7. The humidity control device of claim 6, wherein said humidity control device includes a refrigerant circuit (70) through which a refrigerant is circulated to perform a refrigeration cycle, and wherein the regeneration heater (72) and the auxiliary heater (78,  
15   79) are formed by heating-heat exchangers of the refrigerant circuit (70).

          8. The humidity control device of either claim 2 or claim 3,  
          wherein said humidity control device includes a first adsorptive element (81) and a second adsorptive element (82), and is configured so as to perform a batch running  
20   operation which alternately switches between (a) a first operation in which moisture in a first air stream is adsorbed in the first adsorptive element (81) while moisture is released to a second air stream in the second adsorptive element (82) and (b) a second operation in which moisture in a first air stream is adsorbed in the second adsorptive element (82) while moisture is released to a second air stream in the first adsorptive element (81), and

25           wherein said humidity control device is configured so as to be capable of performing (i) a cooling/adsorption operating mode in which a cooling fluid flows through the auxiliary passageway (86) of the first adsorptive element (81) or the second adsorptive element (82) whichever adsorbs moisture in a first air stream and (ii) a heating/regeneration operating mode in which a heating fluid flows through the auxiliary

passageway (86) of the first adsorptive element (81) or the second adsorptive element (82) whichever releases moisture to a second air stream.

9. The humidity control device of claim 8, wherein said humidity control device  
5 is configured so as to simultaneously perform (i) a cooling/adsorption operating mode in which a cooling fluid flows through the auxiliary passageway (86) of the first adsorptive element (81) or the second adsorptive element (82) whichever adsorbs moisture in a first air stream and (ii) a heating/regeneration operating mode in which a heating fluid flows through the auxiliary passageway (86) of the first adsorptive element (81) or the second  
10 adsorptive element (82) whichever releases moisture to a second air stream.

10. The humidity control device of claim 8, wherein said humidity control device is configured so as to be capable of selectively switching between (i) a cooling/adsorption operating mode in which a cooling fluid flows through the auxiliary  
15 passageway (86) of the first adsorptive element (81) or the second adsorptive element (82) whichever adsorbs moisture in a first air stream and (ii) a heating/regeneration operating mode in which a heating fluid flows through the auxiliary passageway (86) of the first adsorptive element (81) or the second adsorptive element (82) whichever releases moisture to a second air stream.

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11. The humidity control device of claim 8, wherein said humidity control device includes a regeneration heater (72) which heats a second air stream prior to its entrance into the humidity control passageway (85) and the auxiliary passageway (86) of one of the adsorptive elements (81, 82), and a cooler (79, 78) which cools a cooling fluid prior to its  
25 entrance into the humidity control passageway (85) of the other of the adsorptive elements (81, 82).

12. The humidity control device of claim 11, wherein said humidity control device includes a refrigerant circuit (70) through which a refrigerant is circulated to

perform a refrigeration cycle, and wherein the regeneration heater (72) is formed by a heating-heat exchanger of the refrigerant circuit (70) and the cooler (79, 78) is formed by a cooling-heat exchanger of the refrigerant circuit (70).

5           13. The humidity control device of claim 8, wherein said humidity control device includes: a regeneration heater (72) which heats a second air stream prior to its entrance into the humidity control passageway (85) and the auxiliary passageway (86) of one of the adsorptive elements (81, 82); an auxiliary heater (78, 79) which heats a second air stream after its passage through the auxiliary passageway (86) before the second air  
10 stream flows into the humidity control passageway (85); and a cooler (79, 78) which cools a cooling fluid prior to its entrance into the humidity control passageway (85) of the other of the adsorptive elements (81, 82).

          14. The humidity control device of claim 13, wherein said humidity control  
15 device includes a refrigerant circuit (70) through which a refrigerant is circulated to perform a refrigeration cycle, and wherein the regeneration heater (72) and the auxiliary heater (78, 79) are formed by heating-heat exchangers of the refrigerant circuit (70) and the cooler (79, 78) is formed by a cooling-heat exchanger of the refrigerant circuit (70).

20           15. The humidity control device of claim 12, wherein the direction of refrigerant circulation in the refrigerant circuit (70) is reversible, and wherein the direction of refrigerant circulation in the refrigerant circuit (70) is changed in response to switching between adsorptive and regenerative sides in the batch running operation.

25           16. The humidity control device of claim 14, wherein the direction of refrigerant circulation in the refrigerant circuit (70) is reversible, and wherein the direction of refrigerant circulation in the refrigerant circuit (70) is changed in response to switching between adsorptive and regenerative sides in the batch running operation.

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